CLAIMS:

1. A waveform shaping method comprising:

a sampling step for generating a sampling signal by sampling an input signal using a sampling clock which is faster than a data speed of the input signal; and

a waveform shaping step for processing the sampling signal, so that a pulse in the input signal, recognized from the sampling signal, is shaped.

2. The waveform shaping method as set forth in claim 1, wherein:

in the waveform shaping step, waveform shaping is carried out by partially inverting bit string data of the sampling signal.

3. The waveform shaping method as set forth in claim 1 or 2, wherein:

in the waveform shaping step, waveform shaping is carried out by processing a part of the sampling signal, corresponding to a trailing side of the pulse in the input signal.

4. The waveform shaping method as set forth in any one of claims 1 through 3, wherein:

when the input signal is a pulse signal generated

through a signal processing carried out with respect to an original pulse signal on which the input signal is based,

in the waveform shaping step, waveform shaping is carried out by making a pulse width, which is recognized from the sampling signal, of the input signal closer to a predetermined pulse width.

5. The waveform shaping method as set forth in any one of claims 1 through 3, wherein:

when the input signal is a pulse signal generated through a signal processing carried out with respect to an original pulse signal on which the input signal is based,

in the waveform shaping step, waveform shaping is carried out by shortening, by a predetermined value, a pulse width of the input signal, the pulse width being recognized from the sampling signal.

6. The waveform shaping method as set forth in any one of claims 1 through 3, wherein:

when the input signal is a pulse signal generated through a signal processing carried out with respect to an original pulse signal on which the input signal is based,

in the waveform shaping step, waveform shaping is carried out by lengthening, by a predetermined value, a pulse width of the input signal, the pulse width being

recognized from the sampling signal.

7. The waveform shaping method as set forth in any one of claims 1 through 3, wherein

when the input signal is a pulse signal for use in a fixed-pulse-width method, the pulse signal being generated through a signal processing carried out with respect to an original pulse signal on which the input signal is based,

in the waveform shaping step, waveform shaping is carried out by making a pulse width, which is recognized from the sampling signal, of the input signal closer to a smallest pulse width of the input signal, the smallest pulse width being recognized from the sampling signal.

8. The waveform shaping method as set forth in any one of claims 1 through 3, wherein

when the input signal is a pulse signal for use in a fixed-pulse-width method, the pulse signal being generated through a signal processing carried out with respect to an original pulse signal on which the input signal is based,

in the waveform shaping step, waveform shaping is carried out by making a pulse width, which is recognized from the sampling signal, of the input signal equal to or

less than a smallest pulse width of the input signal, the smallest pulse width being recognized from the sampling signal.

9. The waveform shaping method as set forth in any one of claims 1 through 3, wherein

when the input signal is a pulse signal of a fixed-pulse-width method, the pulse signal being generated through a signal processing carried out with respect to an original pulse signal on which the input signal is based,

in the waveform shaping step, waveform shaping is carried out by shaping a pulse width, which is recognized from the sampling signal, of the input signal so that a value of the pulse width is equal to an inverse number of a frequency of the sampling clock.

10. The waveform shaping method as set forth in any one of claims 1 through 3, wherein

in the waveform shaping step, waveform shaping is so carried out that a no-pulse period, which is recognized from the sampling signal, is detected; and, if the no-pulse period is less than a setting value, the no-pulse period is made equal to the setting value.

11. The waveform shaping method as set forth in any one of claims 1 through 10, wherein

in the waveform shaping step, (i) a judgment is carried out, by referring to the sampling signal, as to whether or not a predetermined condition is satisfied, the predetermined condition indicating that the input signal contains a distortion, and (ii) waveform shaping is carried out when the predetermined condition is satisfied.

12. The waveform shaping method as set forth in any one of claims 1 through 10, wherein

in the waveform shaping step, a width of the pulse in the input signal is compared with a reference range determined based on the width of the pulse; and

if the width of the pulse is out of the reference range, waveform shaping is so carried out as to make the width of the pulse be within the reference range.

13. The waveform shaping method as set forth in claim 1, wherein

in the waveform shaping step, a pulse width recognized from the sampling signal is compared with a first reference value, and with a second reference value which is larger than the first reference value by a constant value; and

when the input signal is a pulse signal generated through a signal processing carried out with respect to an original pulse signal on which the input signal is based,

if the pulse width is equal to or larger than the second reference value, the pulse width is reduced by the constant value, irrespective of the pulse width.

14. The waveform shaping method as set forth in claim 13, wherein

if the pulse width is larger than the first reference value but less than the second reference value, the pulse width is reduced, irrespective of the pulse width, so that the pulse width is made as close to the first reference value as possible.

15. The waveform shaping method as set forth in claim 13, wherein

the pulse width is not reduced if the pulse width is equal to or less than the first reference value.

16. The waveform shaping method as set forth in any one of claims 13 through 15, wherein

in the waveform shaping step, a pulse interval recognized from the sampling signal is compared with an interval reference value, and if the pulse interval is less

than the interval reference value, the pulse interval is lengthened, irrespective of the pulse width, so that the pulse interval is made as close to the interval reference value as possible, the pulse interval being a width of a period having no pulse.

17. The waveform shaping method as set forth in claim 1, wherein

when the input signal is a pulse signal generated through a signal processing carried out with respect to an original pulse signal on which the input signal is based,

in the waveform shaping step, a pulse interval recognized from the sampling signal is compared with an interval reference value, and if the pulse interval is less than the interval reference value, the pulse interval is lengthened, irrespective of the pulse width, so that the pulse interval is made as close to the interval reference value as possible, the pulse interval being a width of a period having no pulse.

18. The waveform shaping method as set forth in claim 17, wherein

in the waveform shaping step, a pulse width recognized from the sampling signal is compared with a first reference value, and with a second reference value

which is larger than the first reference value by a constant value; and

if the pulse width is equal to or larger than the second reference value, the pulse width is reduced by the constant value, irrespective of the pulse width.

19. The waveform shaping method as set forth in claim 18, wherein

if the pulse width is larger than the first reference value but less than the second reference value, the pulse width is reduced, so that the pulse width is made as close to the first reference value as possible.

20. The waveform shaping method as set forth in claim 18, wherein

the pulse width is not reduced if the pulse width is equal to or less than the first reference value.

21. The waveform shaping method as set forth in claims 16 or 17, wherein

the pulse interval is lengthened by shifting a position of a pulse adjacent to the pulse interval.

22. The waveform shaping method as set forth in claim 4, wherein

the predetermined pulse width is standardized, irrespective of the pulse width of the input signal, taking into account a level of distortion in the pulse width, the distortion mainly attributed to the signal processing.

23. The waveform shaping method as set forth in claim 4, wherein

when the input signal is a pulse signal for use in a fixed-pulse-width method, the predetermined pulse width is a value close to a lower limit value of a possible pulse width range.

24. The waveform shaping method as set forth in any one of claims 13 through 16 or 18 through 21, wherein

the first reference value is a value close to a lower limit value of a possible pulse width range.

25. The waveform shaping method as set forth in claim 4, wherein

if the input signal contains information related to the pulse width of the input signal, the information is read out, and the predetermined pulse width is determined based on the information.

26. The waveform shaping method as set forth in any

one of claims 13 through 16 or 18 through 21, wherein

if the input signal contains information related to the pulse width of the input signal, the information is read out, and the first reference value is determined based on the information.

27. The waveform shaping method as set forth in claim 5 or 6, wherein

the predetermined value is standardized, irrespective of the pulse width of the input signal, in consideration of a level of distortion in the pulse width, the distortion mainly attributed to the signal processing.

28. The waveform shaping method as set forth in claim 5, wherein

the predetermined value is determined based on (i) a lower limit value of a possible pulse width range of the input signal, and (ii) an inverse number of a sampling clock frequency, and the predetermined value is set less than the lower limit value.

29. The waveform shaping method as set forth in any one of claims 13 through 16 or 18 through 21, wherein

the constant value is determined based on (i) a lower limit value of a possible pulse width range of the input

signal, and (ii) an inverse number of a sampling clock frequency, and the constant value is set less than the lower limit value.

30. The waveform shaping method as set forth in claim 5, wherein

if the input signal contains information related to the pulse width of the input signal, the predetermined value is set smaller than the pulse width read out from the information.

31. The waveform shaping method as set forth in any one of claims 13 through 16 or 18 through 21, wherein

if the input signal contains information related to the pulse width of the input signal, the constant value is set smaller than the pulse width read out from the information.

32. The waveform shaping method as set forth in claim 10, wherein

the setting value is determined, taking into account a level of distortion in a pulse width, the distortion mainly attributed to a signal processing.

33. The waveform shaping method as set forth in

claims 16 or 17, wherein

the interval reference value is determined, taking into account a level of distortion in a pulse width, the distortion mainly attributed to the signal processing.

34. The waveform shaping method as set forth in claim 10, wherein

if the input signal contains information related to a pulse interval of the input signal, a predetermined value is set based on the pulse interval read out from the information.

35. The waveform shaping method as set forth in claims 16 or 17, wherein

if the input signal contains information related to the pulse interval of the input signal, the interval reference value is set based on the pulse interval read out from the information.

36. A waveform shaping device comprising:

sampling means for generating a sampling signal by using a sampling clock for sampling an input signal which is a pulse signal generated from an original signal through a signal processing, the sampling clock having a speed that is faster than a data speed of the input signal;

waveform shaping means for processing the sampling signal so that a pulse in the input signal, recognized from the sampling signal, is shaped.

37. A waveform shaping device comprising:

sampling means; and

waveform shaping means, wherein

the sampling means samples a pulse signal at a sampling period shorter than a minimum pulse width and a minimum pulse interval in the pulse signal, so as to generate a sampling signal which is a discrete symbol string for replacing the pulse signal, the pulse signal being generated by carrying out a signal processing with respect to an original pulse signal,

the waveform shaping means compares a first symbol count with a first reference value and a second reference value which is a constant value larger than the first reference value, where (i) the first symbol count is a number of symbols in a first symbol string having been replaced for a pulse-existing period, and (ii) a second symbol count is a number of symbols in a second symbol string having been replaced for a no-pulse period adjacent to the pulse-existing period, and

if the first symbol count is equal to or more than the second reference value, the waveform shaping means

partially replaces the first symbol string with the second symbol string by the constant value, irrespective of a pulse width of the pulse signal generated through the signal processing, so as to shorten the pulse-existing period.

38. A waveform shaping device comprising:

sampling means; and

waveform shaping means, wherein

the sampling means samples a pulse signal at a sampling period shorter than a minimum pulse width and a minimum pulse interval in the pulse signal, so as to generate a sampling signal which is a discrete symbol string for replacing the pulse signal, the pulse signal being generated by carrying out a signal processing with respect to an original pulse signal,

the waveform shaping means compares a second symbol count with an interval reference value, where (i) the first symbol count is a number of symbols in a first symbol string having been replaced for a pulse-existing period, and (ii) a second symbol count is a number of symbols in a second symbol string having been replaced for a no-pulse period adjacent to the pulse-existing period, and

if the second symbol count is less than the interval

reference value, the waveform shaping means partially replaces the first symbol string with the second symbol string in such a manner that the second symbol count is equal to the interval reference value, irrespective of a pulse width of the pulse signal generated through the signal processing, so as to lengthen the no-pulse period.

39. An electronic device comprising:

the waveform shaping device set forth in any one of claims 36 to 38; and a receiving device for receiving a signal based on an original pulse signal, and for generating the pulse signal.

40. An electronic device comprising:

the waveform shaping device set forth in any one of claims 36 to 38;

a remote control for generating an original pulse signal; and

a receiving device for receiving a signal which is output from the remote control based on the original pulse signal, and for generating the pulse signal.

41. A waveform shaping program for causing a computer to execute each step of the waveform shaping method set forth in any one of claims 1 to 35.

42. A waveform shaping program for causing a computer to function as each means of the waveform shaping device set forth in any one of claims 36 to 38.

43. A computer-readable recording medium storing therein the waveform shaping program set forth in claim 41 or 42.